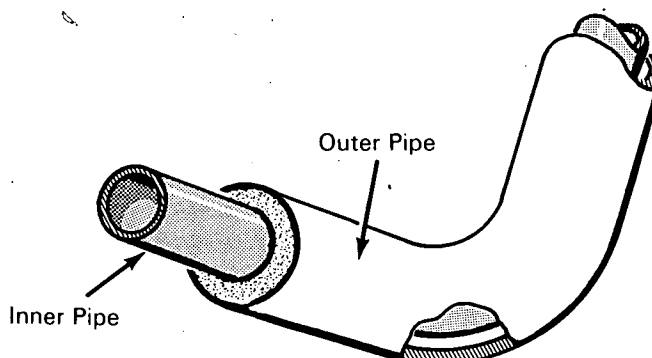


NASA TECH BRIEF



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Technique Cuts Time and Cost of Bending Jacketed Piping



The problem:

Construction of transfer lines where the transferred product is at temperatures either greatly above or greatly below the ambient, requires extensive use of jacketed piping involving a certain number of bends. A standard practice has been to bend each pipe, then split the outer pipe and place the two halves about the inner pipe and weld the outer halves together. This method results in considerable labor cost.

The solution:

A technique that employs a relatively stiff medium in the annular space between inner and outer pipes as they are bent by standard pipe-bending tools.

How it's done:

A length of straight inner pipe is placed in a length of straight outer pipe and one end of the annular passage between them is closed off with spacers to hold them concentric and then sealed with packing or wrapped cloth. The annular space is then filled with water and the open end is similarly closed. Liquid

nitrogen is passed through the inner pipe, causing the water to freeze, the assembly is placed in a standard bending tool and bent to the desired angle, the ice forming the equivalent of a circular mandrel to concentrically retain the spatial relationship of the two pipes.

Notes:

1. Although precise concentric spacing is not assured, experience has shown that satisfactory spacing is obtained in bends on the order of 90° in lengths of 3 to 4 feet in 1-inch OD inner and 1 1/2-inch OD outer pipes having wall thicknesses of 0.065 inch.
2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Western Support Office
150 Pico Boulevard
Santa Monica, California 90406
Reference: B67-10018

(continued overleaf)

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: J. N. Gardner
of North American Aviation, Inc.
under contract to
Western Support Office
(WSO-333)